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Intelligence Report

Fuel Supply of Soviet Combat-Ready Divisions

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INTELLIGENCE REPORT

Fuel Supply of Soviet Combat-Ready Divisions

Summary

Soviet combat-ready divisions can carry enough POL for only about three days of sustained offensive combat. Longer operations would require extensive resupply from army- or front-level resources.

The conclusion derives from an intensive analysis of the mobile POL supply capacities of two Soviet divisions in East Germany--the 10th Guards Tank Division and the 19th Motorized Rifle Division--which are under the Berlin air corridor.

, together with information already available on the capacities of these transporters and of the regular fuel tanks on division vehicles, made it possible to calculate the total fuel supply of each division.

These calculations were then correlated with the fuel consumption of the divisions' vehicles and with Soviet planning factors for fuel usage in combat in order to determine how long the divisions could sustain themselves in offensive combat.

The results accord with Soviet military articles of the early 1960's which indicate that logistical elements of Soviet divisions had been reduced to improve their mobility and combat effectiveness on the nuclear battlefield, and that divisions had no more than three to four days' supply of mobile stocks.

Note: This report was produced solely by CIA. It was prepared by the Office of Strategic Research and coordinated with the Office of National Estimates.

Division POL Capacities

1. Recent intensive analysis has revealed the mobile POL supply capacities of two Soviet divisions in East Germany: the 10th Guards Tank Division and the 19th Motorized Rifle Division.

2. At divisional and regimental levels, most of the POL transport is provided by special-purpose tank trucks and trailers and general-purpose vehicles carrying portable bulk containers. The tank trucks can each transport about 1,000 gallons of fuel and often tow tank trailers of equal capacity. General-purpose trucks carrying bulk containers also can hold about 1,000 gallons each.

3. The analysis shows that the tank division has 338 POL-carrying vehicles, with a total capacity of about 338,000 gallons. The motorized rifle division has 230 POL carriers with a capacity of about 230,000 gallons.

4. The amounts of fuel carried in the divisions' vehicular tanks were calculated from data published by the Soviets on the fuel tank capacities of their vehicles. These amounts and the capacities of the POL supply vehicles were combined to determine the

total POL supplies which a division can carry. These data are summarized in the following tabulation.

	POL Capacity (Gallons)	
	Tank Division	Motorized Rifle Division
Total	514,300	389,900
POL carriers	338,000	230,000
On-board fuel tanks	176,300	159,900
Light and medium tanks	81,900	49,500
Armored personnel carriers	18,500	17,600
Light trucks	1,500	1,800
Medium trucks	60,100	73,400
Heavy trucks	14,300	17,600

Assessment of Capabilities

5. The data on fuel-carrying capacities were then used in conjunction with vehicle inventories, vehicle fuel consumption rates, and Soviet planning factors for combat fuel consumption to determine the probable number of days of intensive combat which a Soviet division could sustain without resupply. The calculations, which are detailed in the section on methodology, indicate that supplies of POL within a division advancing between 60 and 80 kilometers per day would permit sustained periods of intensive combat for only about three to three and a half days. At this point the mobile POL stocks would have been expended and only the fuel in the vehicle tanks would remain. Resupply must commence by this time or the division would begin to lose its combat effectiveness in a matter of hours.

Soviet Planning Factors

6. The planning factors used in these calculations are based mainly on Soviet military writings about advance rates and fuel usage in combat. I a l publication, described Soviet planning factors for fuel consumption in offensive combat in the following terms:

> It is known that the expenditures of fuel during a calendar day when the speed of the offensive is 80 to 100 kilometers may amount to: diesel fuel for heavy tanks, 1.3 fuelings,* and for medium tanks, 0.7 fuelings; aviation gasoline for armored carriers, 0.7 fuelings; motor vehicle gasoline for combat and transport vehicles, 0.45 fuelings.

Malykhin further stated that all calculations assumed a 500-kilometer cruising range for motor vehicles and that, for tanks, calculations were based on the actual capacity of the integral fuel system.** Malykhin's consumption factors assume 2.5 kilometers of total

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* *A fueling is the amount of fuel required to fill all vehicle tanks except auxiliary tanks.*

** *The Soviets provide most vehicles with external fuel containers either as an integral part of the main fuel system or as auxiliary fuel tanks. The external integral type used on tracked vehicles is a flat container--approximately 25-gallon capacity--usually mounted just above the running gear. The auxiliary fuel system used on tracked vehicles consists of two or more jettisonable 53-gallon drums connected to the integral fuel system. These auxiliary tanks are used in movement before combat begins and then are probably discarded.*

driving distance per vehicle for each kilometer of combat advance by the entire unit. This ratio is the same as that used by the US Army in planning for cross-country battle consumption of POL.

7. The 80- to 100-kilometer per-day advance that Malykhin assumed was cited frequently in Soviet military publications of the early 1960's as the expected rate in nuclear combat. Recent Soviet writings, however, suggest that this planning factor has been reduced to a more realistic 60 to 80 kilometers per day in nuclear warfare and 40 to 60 kilometers per day in nonnuclear combat. To allow for these lower advance rates, the fuel usage factors cited by Malykhin were reduced proportionally and the days of effective combat recalculated. The tables in the section on methodology show the results for all three rates of advance for comparative purposes.

8. In all cases the calculations include an allowance for oil and lubricant consumption and combat wastage--the 15-percent figure used in US Army planning.

Soviet Views of POL Requirements

9. In writings of the early 1960's, Soviet military authorities claimed that the "administrative tail" of the Soviet division had been reduced and its firepower increased. The late Minister of Defense, claimed that even greater reductions were planned for the divisions. Others, complained that the cuts had already dangerously reduced mobile stocks at division and army levels. proposed that a division should have at least three to four days of mobile stocks with two or more additional days in mobile depots at army level. The assessment of division POL supplies indicates that the current division's capabilities remain at the level w considered the acceptable minimum.

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Table 1

Soviet Tank Division
Factors for Deriving Periods of Effective Combat

Factors Used	Tanks			Cargo Trucks				
	Light	Medium	APC's	Light	Medium	Heavy	Total	
Advancing Between 80 and 100 Kilometers per Day								
a. Fuel capacity per vehicle (gal)	66	253	132	16	54	107		
b. Fuelings per day	.7	.7	.7	.45	.45	.45		
c. Fuel used per vehicle daily (gal)	46	177	92	7	24	48		
d. Number of vehicles	22	318	140	94	1,112	134		
e. Total fuel used per day (gal)	1,012	56,286	12,880	658	26,688	6,432	119,549*	f + e = 2.8 days of effective combat
f. Mobile stock (gal)							338,000	
g. Fuel on board (gal)	1,452	80,454	18,480	1,504	60,048	14,338	176,276	
Advancing Between 60 and 80 Kilometers per Day								
a. Fuel capacity per vehicle (gal)	66	253	132	16	54	107		
b. Fuelings per day	.55	.55	.55	.35	.35	.35		
c. Fuel used per vehicle daily (gal)	36	139	73	6	19	37		
d. Number of vehicles	22	318	140	94	1,112	134		
e. Total fuel used per day (gal)	792	44,202	10,220	564	21,128	4,958	94,144*	f + e = 3.6 days of effective combat
f. Mobile stock (gal)							338,000	
g. Fuel on board (gal)	1,452	80,454	18,480	1,504	60,048	14,338	176,276	
Advancing Between 40 and 60 Kilometers per Day								
a. Fuel capacity per vehicle (gal)	66	253	132	16	54	107		
b. Fuelings per day	.4	.4	.4	.25	.25	.25		
c. Fuel used per vehicle daily (gal)	26	101	53	4	14	27		
d. Number of vehicles	22	318	140	94	1,112	134		
e. Total fuel used per day (gal)	572	32,118	7,420	376	15,568	3,618	68,623*	f + e = 4.9 days of effective combat
f. Mobile stock (gal)							338,000	
g. Fuel on board (gal)	1,452	80,454	18,480	1,504	60,048	14,338	176,276	

* *Adjusted by a factor of 15 percent to cover combat wastage and oil and lubricant consumption.*

Table 2

Soviet Motorized Rifle Division
Factors for Deriving Periods of Effective Combat

Factors Used	Tanks			Cargo Trucks			Total	
	Light	Medium	APC's	Light	Medium	Heavy		
Advancing Between 80 and 100 Kilometers per Day								
a. Fuel capacity per vehicle (gal)	66	253	80	16	54	107		
b. Fuelings per day	.7	.7	.7	.45	.45	.45		
c. Fuel used per vehicle daily (gal)	46	177	56	7	24	48		
d. Number of vehicles	22	190	220	115	1,359	164		
e. Total fuel used per day (gal)	1,012	33,630	12,320	805	32,616	7,872	101,493*	f + e = 2.3 days of effective combat
f. Mobile stock (gal)							230,000	
g. Fuel on board (gal)	1,452	48,070	17,600	1,840	73,386	17,548	159,896	
Advancing Between 60 and 80 Kilometers per Day								
a. Fuel capacity per vehicle (gal)	66	253	80	16	54	107		
b. Fuelings per day	.55	.55	.55	.35	.35	.35		
c. Fuel used per vehicle daily (gal)	36	139	44	6	19	37		
d. Number of vehicles	22	190	220	115	1,359	164		
e. Total fuel used per day (gal)	792	26,410	9,680	690	25,821	6,068	79,880*	f + e = 2.9 days of effective combat
f. Mobile stock (gal)							230,000	
g. Fuel on board (gal)	1,452	48,070	17,600	1,840	73,386	17,548	159,896	
Advancing Between 40 and 60 Kilometers per Day								
a. Fuel capacity per vehicle (gal)	66	253	80	16	54	107		
b. Fuelings per day	.4	.4	.4	.25	.25	.25		
c. Fuel used per vehicle daily (gal)	26	101	32	4	14	27		
d. Number of vehicles	22	190	220	115	1,359	164		
e. Total fuel used per day (gal)	572	19,190	7,040	460	19,026	4,428	58,323*	f + e = 3.9 days of effective combat
f. Mobile stock (gal)							230,000	
g. Fuel on board (gal)	1,452	48,070	17,600	1,840	73,386	17,548	159,896	

* *Adjusted by a factor of 15 percent to cover combat wastage and oil and lubricant consumption.*